

SYSTEM AND METHOD FOR FINGERPRINT IMAGE ENHANCEMENT USING PARTITIONED LEAST-SQUARED FILTERS

ABSTRACT

In an automatic fingerprint authentication or identification system, the fingerprint image acquisition is severely effected by the limitations of the acquisition process. The two modes of input, viz. scanning inked fingerprints from paper records or directly from a finger using live-scan fingerprint scanners suffer from the following noise sources in the input in addition to standard noise in the camera. Non-uniform ink application, uneven pressure while rolling on the paper or pressing on the scanner surface and external dirt like oil and climatic variations in the moisture content of skin are some of the main causes for the ridges and valleys not to be imaged clearly. This invention deals with a method of learning a set of partitioned least-squares filters that can be derived from a given set of images and ground truth pairs as an offline process. The learned filters are convolved with input fingerprint images to obtain the enhanced image.